# Technical Service Bulletin

| SUBJECT: SUNROOF GLASS ADJUSTMENT PROCEDURE | | | No: TSB–11–42A–006 |
|---|---|---|---|
| | | | DATE: August, 2011 |
| | | | MODEL: 2004–2011 Endeavor |
| **CIRCULATE TO**: | [ ] GENERAL MANAGER | [ X ] PARTS MANAGER | [ X ] TECHNICIAN |
| [ X ] SERVICE ADVISOR | [ X ] SERVICE MANAGER | [ X ] WARRANTY PROCESSOR | [ ] SALES MANAGER |

***This TSB supercedes TSB–09–42A–009, issued June, 2009, to include replacing the rear mounting screws for ALL repairs, change the flushness specification, and supply specific warranty labor information. This is a complete rewrite and individual changes are not identified.***

## PURPOSE

Some affected vehicles may exhibit loosening of the sunroof glass mounting screws resulting in mis–adjustment and potential wind noise or water leak concerns. If severely misadjusted, there may be occasions where the sunroof will not open or close properly. Additionally, it may be difficult to adjust the sunroof glass to the flush and gap specifications, requiring shimming of the assembly to achieve proper fit.

This Technical Service Bulletin supplements the service manual to provide a new sunroof glass adjustment procedure, including instructions to install a special repair screw and a revised sunroof glass screw tightening torque procedure. It also includes enhanced instructions for verifying sunroof glass adjustment and instructions for installing a shim in extreme cases to achieve proper fit.

## AFFECTED VEHICLE(S)

2004–2011 Endeavor models equipped with factory installed sunroof

## PROCEDURE

Any vehicle identified with the symptoms listed in the Purpose section should have the sunroof glass adjustment verified and corrected if necessary, and have special repair screws installed in the rear mounting holes using the following procedures. These procedures will reduce the possibility of repeat sunroof repairs.

1. Verify (and adjust if necessary) sunroof glass flush and gap per the following adjustment standards.

   Maximum Allowable Sunroof Glass Flush Adjustment Standards (for determining if adjustment or other repairs are necessary to correct sunroof glass flushness). If sunroof glass flushness is within these specifications, adjustment is not necessary.

   - The sunroof glass should be set from 1.5mm under flush to 2.5mm over flush to the body at the front corners.
   - The sunroof glass should be set from 2.0mm under flush to 1.5mm over flush to the body at the rear corners.
     **An excessive under flush condition at the rear edge may lead to wind noise.**

   Preferred Sunroof Glass Flush Adjustment Target (tighter measurements for best fit). When adjusting sunroof glass flushness, use the following targets to achieve the best fit.

   - The sunroof glass measurement is from 1.5mm under flush to 1mm over flush to the body at the front corners.
   - The sunroof glass measurement is from 1.5mm under flush to 1mm over flush to the body at the rear corners.

continued

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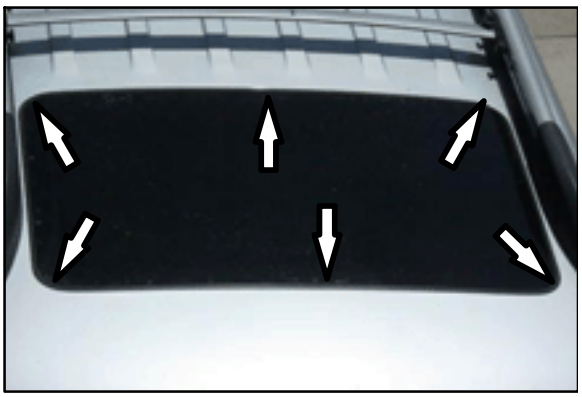
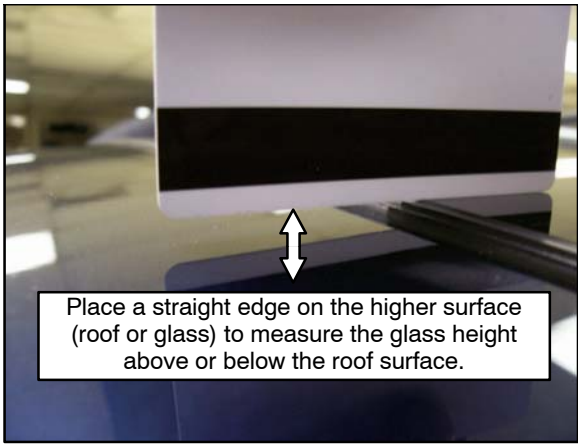
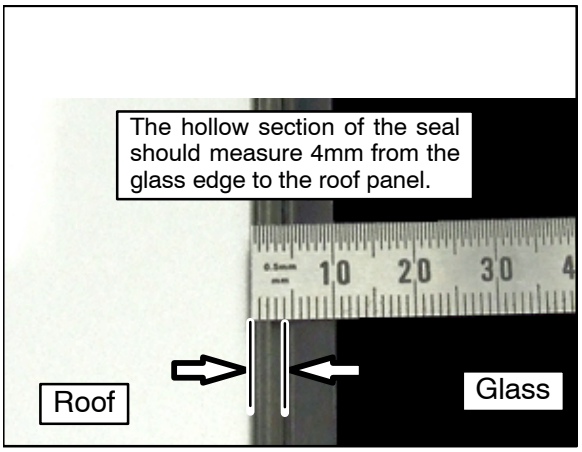
## Adjustment Procedure






1. Use the following steps to adjust the glass to the Preferred Sunroof Glass Flush Adjustment Target. Torque the sunroof glass screws only as instructed.

   a. Open the sunroof completely and clean the roof opening with a clean, wet rag using only mild soap and water. Clean the front edge of the sunroof seal as well. The seal is specially treated and cleaners or solvents may affect it.

   b. Open it to the vent position. Clean the rest of the sunroof seal using only mild soap and water. Close the glass.

   c. Operate the sunroof several times in open and vent modes. Check glass to roof flushness using a straight edge at the points indicated. It may be higher in the center than at the corners. Use the corners to determine flushness.

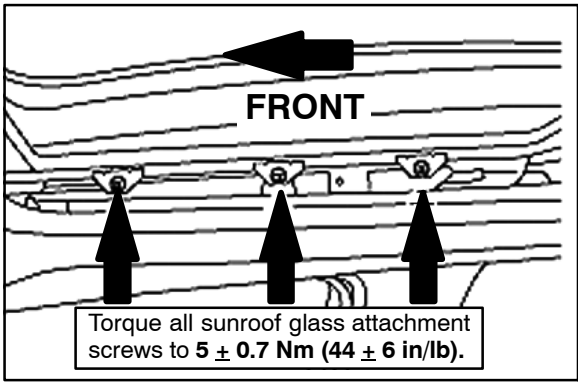
   **NOTE:** If the sunroof is within the Maximum Allowable Sunroof Glass Flush Adjustment Standards, adjustment is not necessary.

   If Adjustment is necessary, continue with step d.

   d. Loosen all 6 sunroof glass attaching screws slightly.

   e. Replace the **rear screws only** with repair screws (p/n 5850A228). Do not tighten them fully at this time. They must be loose to allow adjustments.

   f. Center the glass front–to–rear. The area of the seal indicated at left should be 4mm.



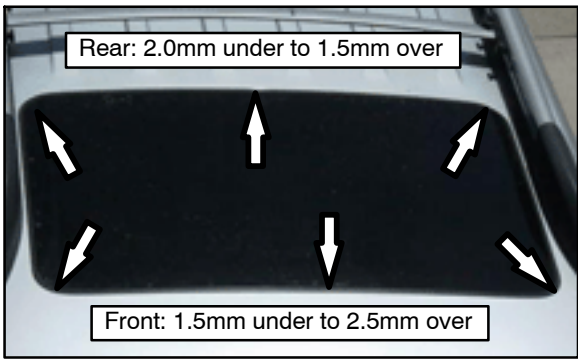

g. From inside the vehicle, push up on the rear center of the sunroof glass. Have someone advise when the rear corners of the glass are approximately 2mm over flush to the roof at the rear corners. Torque only the rear screws to 5 ± 0.7 Nm (44 ± 6 in/lb). **DO NOT OVER TIGHTEN**. You may notice some downward settling when you release pressure.

h. From outside the vehicle, have someone press down on the front center of the glass until it is approximately 2mm under flush to the roof at the front corners. Torque the front screws first, then the center screws to 5 ± 0.7 Nm (44 ± 6 in/lb). **DO NOT OVER TIGHTEN**. You may notice some upward settling when you release pressure.

i. Check that all flushness is within the maximum adjustment standard.

j. Cycle the sunroof in vent and fully open modes.

k. Insert a business card or similar material between the body and the sunroof seal. Compare the drag at various locations by pulling the card out to ensure the sunroof is properly centered. Drag should be even around the entire sunroof. If it is not, repeat the adjustment procedure to center the glass.

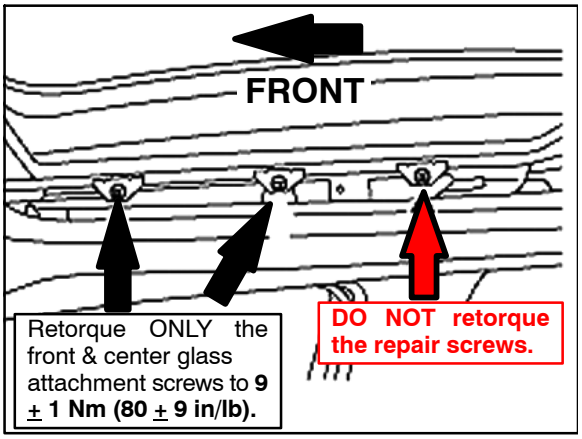



2. Measure the sunroof glass to roof flushness.

**NOTE:** Take care to insure this measurement is accurate. It will determine if shimming the sunroof assembly is required.

a. If the sunroof glass adjustment is within the standard, perform steps 3, and 4.

b. If the sunroof glass adjustment is NOT within the standard, perform steps 3, 4, and 5.




3. Torque the front and center attachment screws further to 9 ± 1 Nm (80 ± 9 in/lb).

   **!! DO NOT RETORQUE THE REAR SCREWS !!**

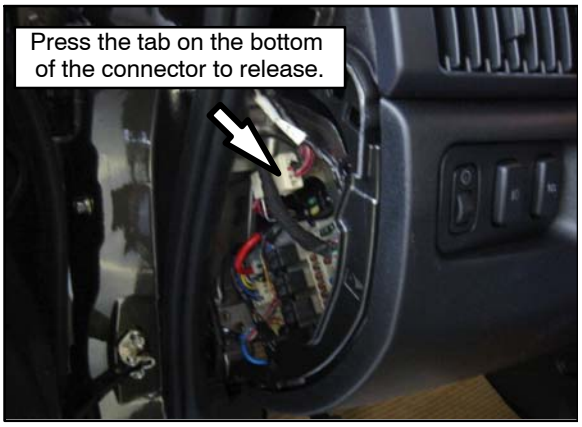
4. Cycle the sunroof several times in vent and fully open modes, then recheck the fit. In some cases, sunroof operation and fit may be incorrect, resulting in incomplete closure of the glass or difficulty in opening the glass to the vent position. If so, perform the "Sunroof Initialization" procedure on page 4.

5. Recheck flushness:
   a. If the sunroof glass is adjusted within specification continue to step 6.
   b. If the glass is over flush and the measurement exceeds the standard, perform the "Shimming the Sunroof" procedure beginning on page 4.
   c. If the glass is under flush and the measurement exceeds standard, replace the sunroof housing assembly. Refer to ASA CAPS for the correct part number.
6. When all adjustments, shimming and repairs are complete, test drive the vehicle. Operate the sunroof several times in vent and fully open modes during the test drive. Recheck the fit when completed. Readjust and torque screws as necessary.

**NOTE:** For 2007 model year only: Confirm correct appearance and installation of the headliner and headliner trim at the sunroof opening. Refer to TSB–07–52A–003 for repair information.

**Sunroof Initialization (if required)**

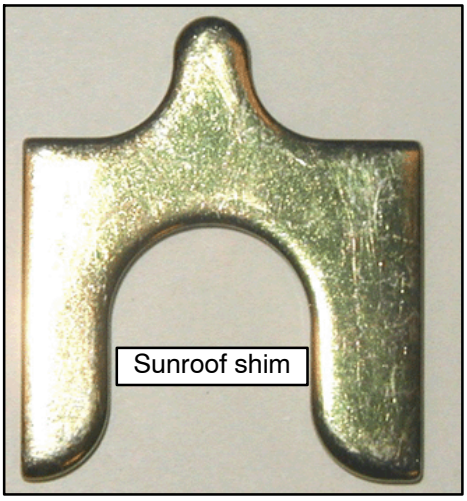
Use the following instructions to initialize the sunroof.




1. Put the sunroof ECU into learning mode:
   a. Remove the fuse panel cover at the left side of the dash.
   b. While pressing the sunroof switch to open the glass, disconnect connector C–33.
   c. Reconnect C–33. Repeatedly press the sunroof switch in the closed direction until the sunroof is fully closed.
   d. Continue pressing the switch in the closed direction. The sunroof will open to the full vent position.
   e. Press the switch in the closed direction until the sunroof fully closes.
   f. Press the sunroof switch in the open direction. When the sunroof stops at the "comfort" position (approx 2/3 the total distance) press the switch again until it stops at the full open position.
   g. Press the sunroof switch until the sunroof fully closes.
2. Sunroof timing should now be correct and the sunroof should operate normally. If not, repeat the procedure.

## Shimming the Sunroof Assembly (if required)

**NOTE:** If shimming is required, removal of the headliner to access the sunroof mounting nuts is required. Refer to Group 52A – Interior, of the service manual for headliner removal procedures




- Use the measurements taken in step 5b to determine if shimming the sunroof assembly is possible. If glass over flush fit is still more than 3 mm higher than the standard, replace the sunroof housing assembly.
- Shims are available, 1mm and 2mm thickness. Refer to the Parts Information section of this TSB for part numbers.
- Shims can be combined to a maximum thickness of 3mm.
- The difference in shim thickness between the left and right sides cannot be more than 1mm (i.e. 1mm thickness on one side and 3mm on the other).

**Example 1:** Sunroof front edge height is 2.5mm over flush to the roof at both sides
**Remedy:** Shim the front of the sunroof down 2mm to bring the glass height to an acceptable level.

**Example 2:** Sunroof front edge is over flush by 3.5mm on the right and 2.5 mm on the left.
**Remedy:** Shim 3mm on the right and 2mm on the left to bring the glass height to an acceptable level and balance left to right installation height.

## Shim Installation

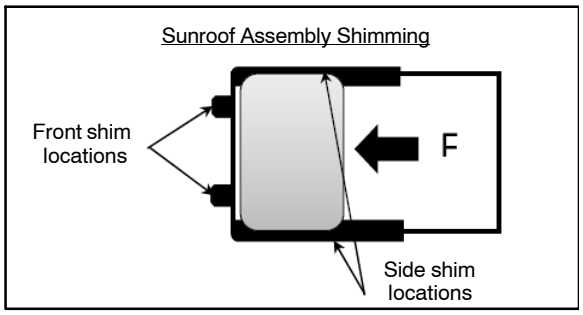
**Shimming should only be performed if the glass is over flush to the roof more than 2.5mm, but less than 6mm in the front, and more than 1.5 mm, but less than 5mm in the rear AFTER all adjustments have been completed**.

**NOTE: DO NOT READJUST THE GLASS DURING THIS PROCEDURE!**

All glass adjustments should be completed prior to shimming. No further adjustment is necessary.

1. Remove the headliner. Refer to group 52A – Interior in the applicable service manual.

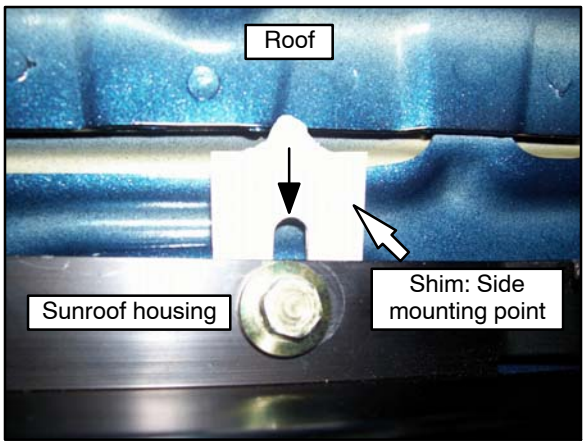
**⚠ CAUTION** **Insure your hands and clothing are clean and dry prior to handling interior parts.**

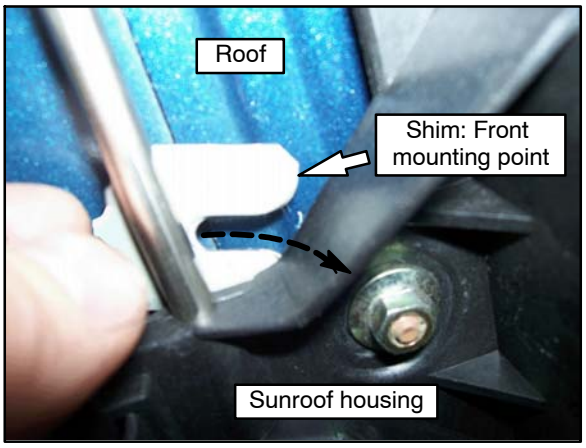



**NOTE:** Install shims as required at the the two front and two most forward side sunroof housing mounting points.

2. Loosen (do not remove) the mounting bolts for the four locations indicated.

3. Slide the shims between the sunroof housing and the roof. Stack shims as necessary (to a maximum of 3mm) to achieve the required thickness. Insert the shim completely until the stud contacts the bottom of the slot in the shim (arrow, below left).




4. Tighten all four mounting studs. Torque to 35–53 in/lb (4–6 Nm).
5. Measure the glass height as shown in step 2 of the "Adjustment Steps" to confirm all measurements are within Maximum Allowable Sunroof Glass Flush Adjustment Standards.

   **NOTE:** If the rear of the sunroof glass is now lower than specification, you can remove shims at the side mount locations to improve fit (maintain the maximum 1mm side–to–side difference). Recheck glass fit as necessary following any changes.
6. Reinstall the sunroof switch and test the sunroof to verify normal operation prior to reinstalling the headliner. Cycle the sunroof in the fully open and vent positions several times and recheck measurements.
7. In some cases sunroof operation may be incorrect, resulting in incomplete closure of the glass or difficulty in opening the glass to the vent position. If so, perform the "Sunroof Initialization" procedure on page 4. If operation is normal, proceed to step 8.
8. Reinstall the headliner. Check all functions, including sunroof operation, lighted vanity mirror operation, dome light operation and hands free communication (if equipped).

## PARTS INFORMATION

Use the Genuine Mitsubishi Parts listed below:

| Description | Model | Qty | Part Number |
|---|---|---|---|
| Repair Screw | Endeavor | 2 (max)<br>Orders for the repair screw will be filled in multiples of 2. | 5850A228 |
| Shim – 1mm | Endeavor | As required | MR132525 |
| Shim – 2mm | ↓ | ↓ | MR132526 |

## WARRANTY INFORMATION

This bulletin is supplied as technical information only and is not an authorization to repair. If an affected vehicle is reported with the described condition, diagnose the condition, repair as described in this TSB and submit a normal warranty claim.

**ENDEAVOR SUNROOF FLUSHNESS ADJUSTMENT (includes ECU initialization)**

*Nature Code:* 86D *Cause Code:* 410

*Labor Operation No.:* 423692 92 *Time Allowance:* 0.3 hr.

*Warranty Coverage:* **BASIC** Coverage. Refer to the *Superscreen* for BASIC warranty coverage terms applicable to each vehicle.

**ENDEAVOR SUNROOF SHIM INSTALLATION (includes headliner R & R) if necessary**

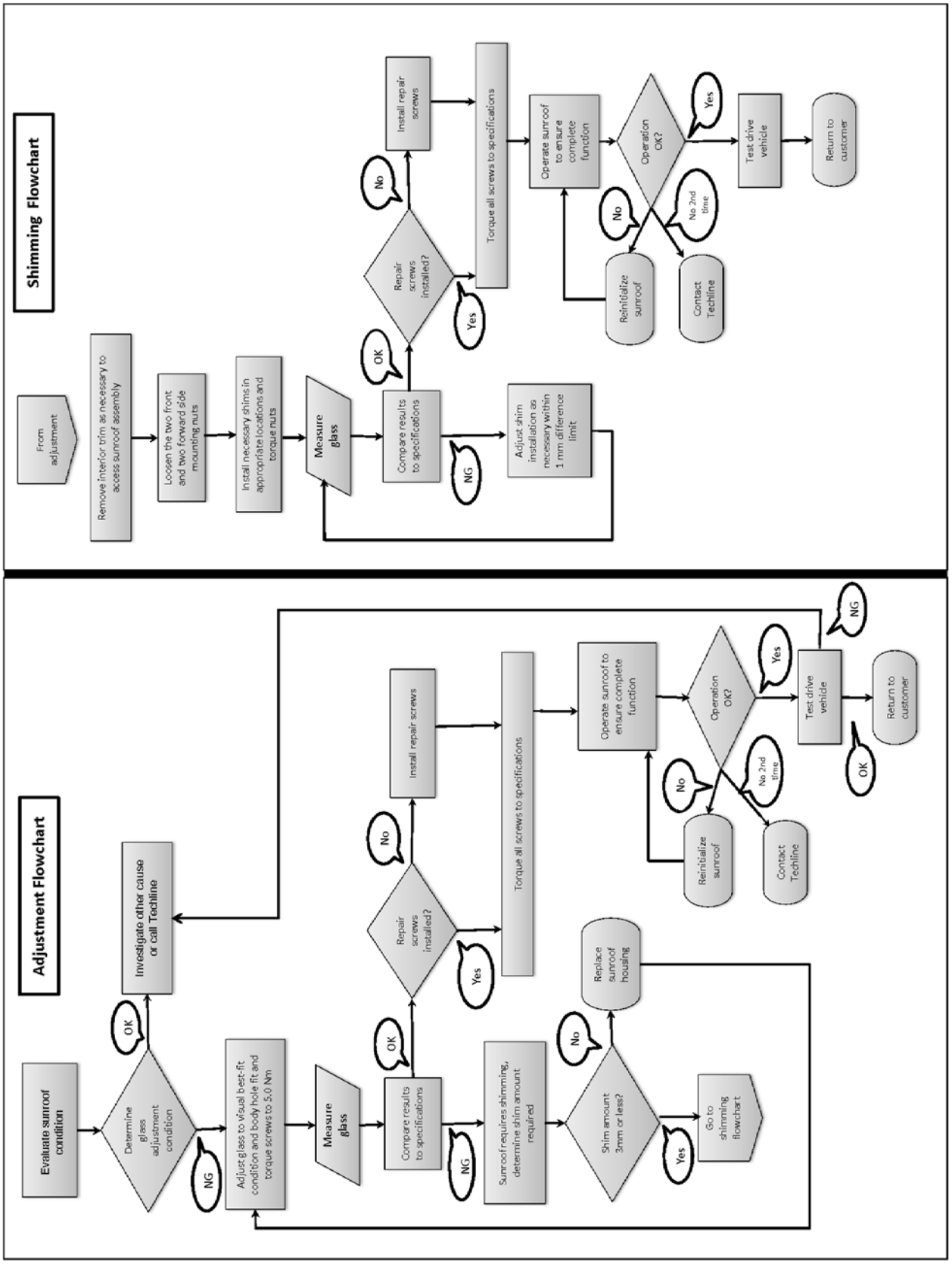
*Nature Code:* 86D *Cause Code:* 410

*Labor Operation No.:* 423692 93 *Time Allowance:* 3.4 hr.

*Warranty Coverage:* **BASIC** Coverage. Refer to the *Superscreen* for BASIC warranty coverage terms applicable to each vehicle.

**NOTE:** If shimming the sunroof is necessary, claim for both adjustment and shimming.

Flowcharts for Sunroof TSB for Glass adjustment and shimming

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